

Technology Innovation Office & Brownfields

Introduction

The mission of the Technology Innovation Office is to advocate more effective, less costly approaches by government and industry to assess and clean up contaminated waste sites, soil, and groundwater. The scope of this mission includes Brownfields, defined by the EPA's Outreach and Special Projects Staff as *"Abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination"*. TIO has identified a growing need to increase awareness on effective applications of innovative and conventional technologies in the Brownfields (BF) community. Challenges specific to meeting this need include reaching a fragmented community, helping non-technical decision makers reach wiser technology decisions, and finding technical solutions to contamination problems whose remediation is driven more by concerned communities and constraining economic equations than by Federal or State regulations.

Improved decision making capabilities will in turn accelerate BF redevelopment by reducing costs associated with site characterization and remediation. The expanded market for technologies generated by BF clean-ups will also benefit the nation's hazardous waste clean-up industry through increased sales and supporting the need for further research and development funding. Ultimately, technological and business development advances may further decrease clean-up costs, and shift more BF clean-up decisions from "hold" to "proceed". TIO will focus its efforts to those areas where technical expertise is required. OSPS continues to lead in policy and institutional development assistance to BF communities.

TIO's Brownfields Team proposes to increase effective applications of innovative and conventional technologies at BF sites in three ways. The first is by means of technology bench marking in the BF community. The technical, economic, and social constraints encountered in BF cleanups differ from those common to Superfund cleanups. Documenting successful technical solutions applied to BF cleanups, and efficiently disseminating the knowledge will contribute to lowering barriers to otherwise readily available solutions. Information dissemination is in itself the second strategy proposed by the BF Team. By building on existing networks and creating new dissemination channels, TIO expects to improve communication between the supply and the demand for BF clean-up solutions. Finally, for those technology application areas identified as being in critical need of "ground truthing" or full scale applications in a BF environment, the BF team proposes to help support the first implementation of full scale characterization or remediation projects. These projects will be developed in cooperation with other major stakeholders (BF pilots, NGOs, professional and business organizations), so as to maximize participation, learning, and the general distribution of benefits and knowledge generated by the projects.

Programs of Action

The following are results of the initial scoping by the BF team in search of tangible venues to achieve TIO's BF goals.

Short Term

1. BF Inventory Review:

Sound information on the Brownfields site population will be the basis for any further work TIO initiates in this hazardous waste problem area. The following table contains a preliminary analysis of chemical contaminants and size at 94 sites (parcels) with complete information in the OSPS Brownfields Management System resulted in the following information:

Contaminants	
Metals (no further breakdown)	68%
Volatile Organic Compounds	53%
Other	22%
DNAPLs	17%
PCBs	16%
Size	
Mean	159
Median	10.5
Range	0.2 - 11,000

Given the small sample size (94) in relation to the large BF population estimates (150,000-450,000), extrapolations from this sample size are suspect. The first TIO effort will therefore be to expand this research effort through a work assignment that will gather additional information from existing BF databases, increasing the sample size and increasing our knowledge on which are the most common BF problem areas. Improved knowledge will allow us to better target our efforts, maximizing returns by addressing the most common problems first. Through a two-step process, we will first evaluate which databases are most likely to yield the necessary information, and then proceed to collect and analyze the data on as many of the following BF characteristics as possible:

Name, location, contaminants, media, prior use, size, contact, redevelopment priority (subjective), source of information, and current status (Phase I, II, in clean-up stage).

2. Federal Facility Open Doors/Site Visits

Many Base Realignment and Closure (BRAC) facilities have followed very innovative approaches to reducing the costs associated with characterizing and remediating their installations prior to transition to civilian commercial use. Umatilla Army depot (Hermiston, OR) for example, used on-site

colorimetric and immunoassay methods to provide real time data. Savings in time and money achieved were significant (from \$250/sample down to \$60/sample, and 3 weeks to 1 day), bringing the costs closer to what a BF budget can generally absorb. The TIO BF Team proposes to create partnerships between BF stakeholder organizations and Federal Facilities willing to share their knowledge and experience. A coordinated effort between the Federal Facilities Restoration and Resuse office, GSA, and representatives of BF communities could be the basis for one or multiple one-day visits to Federal Facilities that have successfully cleaned up and sold ex-BF facilities. GSA and/or the Federal Facilities Restoration and Reuse Office (FFRRO) would provide the facility and staff involved in the clean up and transition effort, while an NGO (as representative of the community) would handle logistics and marketing of the effort and opportunity.

3. Web Page:

A search of on-line BF Web pages relating to BF's cleanup failed to produce any significant sources of information on actual technology deployment. There is significant support for the policy, economic, and community/public relations groups involved in BF redevelopment, but a very large gap exists in the area of characterization and clean-up technologies. TIO's BF Team proposes to either create a special interest section on CLU-IN.COM, or improve our partnership with OSPs to develop and maintain a technology section on their Brownfields homepage, the current leader in on-line delivery of BF information. While much of the information applicable to BF managers is already available on clu-in, it may require specific pointers and/or repackaging to meet the needs of the BF clients.

4. Partnerships with Regional Coordinators and Other Stakeholder Groups

The Regional Coordinators are important clients for TIO, as well as key partners in BF projects. Given the fragmented nature of the BF community, it is pivotal that communication channels such as these be used to their maximum potential to reach individual BF decision makers. Communication should flow both ways, so that TIO can distribute information, and gather input on what the ultimate BF clients need. These groups will be pivotal in ensuring the success of proposals such as what has been described in #2.

Long Term Programs

5. Technical Support Centers

TIO is considering the implementation of pilot BF TSPs in FY99. Prior discussion needs to focus on the structure, proposed client base, implementation method, and staffing of these TSPs. These centers will serve primarily to provide BF decision makers with technical expert support capable of reviewing proposals (characterization or remediation) submitted to non-technical decision makers, or those with limited resources. TSPs will evaluate the technical qualities of bids/projects submitted by contractors, creating a central resource to help Brownfields communities review sampling and clean-up planning documents to ensure that the best, most environmentally and economically effective technology decisions are being. In 1999, TIO proposes to pilot this idea, either in a limited number of support areas or with a few Regions before making the capability available on a full-scale basis in 2000.

6. Site Demos

Possibly a major component of a grant or cooperative agreement to an NGO, site demos would serve the dual purpose of evaluating the performance of certain technologies when applied in a BF environment, while at the same time offering BF decision makers an opportunity to provide input in the planning phase, and thereby receive answers to questions they may have.

7. Case studies

Selected case studies would be developed to document the application (past or current) of specific technologies in BF environments. These could be drawn from the site demos described in #6, or from currently on-going or planned projects such as the use of phytoremediation in Burlington, Vermont.

8. Training

Another project that could be implemented under an agreement with an NGO. Three main training areas could be provided to BF decision makers: site characterization technologies, innovative treatment technologies, and information resources. These courses currently exist and have been delivered successfully multiple times. Through a cooperative effort with an NGO, they could be redesigned to meet the needs of the new target audience, and this audience could be more readily identified and kept informed of these opportunities.

9. Technology Users Guide

Technology applications in BF environments are driven by a different set of forces than in the regulatory environment. A Risk Based Corrective Action approach is more common, in particular one taking into account future land use. Portland, Oregon, has expressed interest in participating in a project that would combine GIS, as a land use planning tool, with technical feasibility studies to create a new technology selection guide. Such a project could be implemented through a cooperative agreement or grant.